

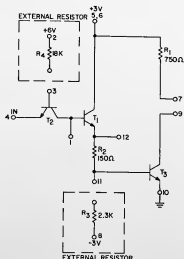
Functional Description

The Transmission Line Receiver, TLR-1A, is an interface driver between a terminated transmission line and another SLT module. Eight transmission line receivers may be placed on any one transmission line.

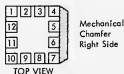
The first transistor, T_2 , is heavily saturated which has very low V_{CE} drop. The second transistor, T_1 is on regardless of the input line level. When the input is up, T_3 is on and the output is down. When the input is down, T_3 is cut off and the output is up. When the power is turned on a TLR, there exists a high input impedance which will not load down the driver and the other drivers and TLR's on the transmission line will operate normally.

The "OR" function can be accomplished by dotting collectors (parallel connected collectors) with other circuits or modules. However, only one collector resistor is required.

Schematic

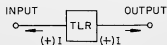


Terminal Configuration



Pins 1 and 12 Leave Open

Block Diagram



Maximum Ratings

Input Voltage = 4V

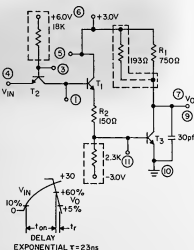
Output Voltage = 6V

I_E (output T_X) = 36ma

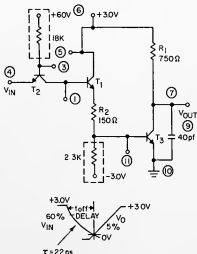
TLR-1A Module Functional Tests

TESTS	TERMINAL CONDITIONS												C	ADDITIONAL LOAD REQUIREMENTS	VARIABLE	LIMITS		UNITS
	1	2	3	4	5	6	7	8	9	10	11	12				MIN	MAX	
DC ON			18K Ω to +5.76V	+2.18V		+2.88V	V_0		V_0	GND	2.3K Ω to -3.12V		25	90 Ω RESISTOR FROM TERMINAL 7 TO -3.12V	V_{OUT}		0.37	V
DC ON			18K Ω to +5.76V	+2.03V		+2.88V	V_0		V_0	GND	2.3K Ω to -3.12V		25	153 Ω RESISTOR FROM TERMINAL 7 TO -3.12V	V_{OUT}		0.30	V
DC NOISE			18K Ω to +6.26V	+1.26V		+0.12V	V_0		V_0	GND	2.3K Ω to -3.88V		75		V_{OUT}		2.41	V
t_{ON}			18K Ω to +6.0V	INPUT		+3.0V	V_0		V_0	GND	2.3K Ω to -3.0V		25	193 Ω RESISTOR FROM TERMINAL 7 TO -3.0V	t_{ON}		35	ns
t_r			18K Ω to +6.0V	INPUT		+3.0V	V_0		V_0	GND	2.3K Ω to -3.0V		25	193 Ω RESISTOR FROM TERMINAL 7 TO -3.0V	t_r		14	ns
t_{OFF}			18K Ω to +6.0V	INPUT		+3.0V	V_0		V_0	GND	2.3K Ω to -3.0V		25		t_{off}		35	ns
													75				50	ns

t_{on} and t_r Test Circuit



t_{off} Test Circuit



Input Requirements

$V = +3.12\text{V}$, $I = -0.35\text{ma}$

$V = 2.18\text{V}$, $I = -0.10\text{ma}$

$V = 2.03\text{V}$, $I = -0.06\text{ma}$

$V = 1.26\text{V}$, $I = +0.25\text{ma}$

$V = 0.0\text{V}$, $I = +0.32\text{ma}$

Normal Up Level Region

Normal Down Level Region

Output Specifications

$V = 3.12\text{V}$, $I = -0.60\text{ma}$

$V = 2.00\text{V}$, $I = -0.6\text{ma}$

$V = 0.30\text{V}$, $I = -22\text{ma}$

$V = 0.0\text{V}$, $I = 0.0\text{ma}$

Normal Up Level Region

Normal Down Level Region

Fan Out

Total collector current for the TLR-1A is 22ma

$$22\text{ma} \geq I_{RC} + N_1K_1 + N_2K_2 + N_3K_3$$

I_{RC} - Collector resistor current = 4.0ma

N_1 - Number of AI-2A loads

N_2 - Number of AOI-2A loads

N_3 - Number of AOI-1A Loads

K_1 - AI-2A loading constant = 2.3ma

K_2 - AOI-2A loading constant = 3.0ma

K_3 - AI-1A Loading constant = 5.0ma

Maximum Power Supply Current Requirements

	<u>ON</u>	<u>OFF</u>
+6V	0.20ma	0.31ma
+3V	17.75ma	1.66ma
-3V	-1.86ma	-1.66ma

Maximum Power Dissipation

<u>ON</u>	<u>OFF</u>
70.0mw	6.0mw

$$\text{Average Normal Power Dissipation} = \frac{\text{NOMINAL ON} + \text{NOMINAL OFF}}{2} = 30.0\text{mw}$$

General Wiring Rules (For Printed Circuit Wire - 10 Mil Width Lines)

The input line length from the TLR-1A to the terminated line must not exceed 3". The maximum net length at the output should be less than 60", unless longer delays can be tolerated.